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## What is an ELA User Reconciliation Audit (URA)?

By Donna  
Offerson

The Branch of Geospatial Support (BOGS) manages the Department of the Interior's (DOI) software Enterprise Licensing Agreement (ELA) with ESRI® for the Bureau of Indian Affairs (BIA). A critical part of the ELA is for BOGS to provide the BIA accurate and up-to-date counts of licenses for all ELA software users. The number of licensed users drives the overall cost of BIA's participation in the ELA. The URA is the method we use to fulfill this requirement and provide accountability for the acquisition of ArcGIS software.

You may have recently received an email from BOGS about your annual URA. Please update and return it as soon as possible so that we will have an accurate user count for fiscal year 2015. Please contact the Geospatial Support Help Desk at 877.293.9494 or [geospatial@bia.gov](mailto:geospatial@bia.gov) if you have not received your URA form or if you have any questions.

## Geodetic Survey Benchmarks

By Jeff Metius

You might sometimes have a need for Brass Cap location data. You may wonder, "Where can I get this data?" and once you have that data, "What does it mean?" The National Geodetic Survey (NGS) maintains a very helpful website containing the records of all reported benchmarks. Their website (<http://www.ngs.noaa.gov/>) is a great resource for finding datasets and provides free access to all datasheets for benchmarks as well as new geographic identity code (GEOID) models that are being tested. A GEOID model can



Image source: [http://www.ngs.noaa.gov/web/about\\_ngs/history/Survey\\_Mark\\_Art.pdf](http://www.ngs.noaa.gov/web/about_ngs/history/Survey_Mark_Art.pdf)

be used to better determine your survey height with respect to mean sea level.

On the NGS website, you can navigate to the Survey Marks and Datasheet web page. You can use their viewer (<http://www.ngs.noaa.gov/NGSDDataExplorer/>) to locate survey marks near an area of interest. Symbolology in the viewer allows you to know whether the mark has vertical accuracy or just horizontal accuracy. Then you can view the datasheets for these marks and find out additional information, such as the condition of the mark, the last time the mark was visited, and when the mark was created. Once you locate several marks on the viewer that you are interested in, you can then go into the field and locate the marks. By capturing a point at these locations, you can also verify the accuracy of the points you are collecting in that same area. The NGS survey mark dataset is a very useful tool when capturing information and points in the field, or when you need to verify a location on a map.

## Data Depot: TIGER Files

By David O'Donnell

Have you ever heard of "Tiger" files and wondered what the largest wild cat in the world has to do with Geographic Information Systems (GIS)? TIGER actually stands for Topologically Integrated Geographic Encoding and Referencing, which is spatial data produced and distributed by the US Census Bureau. The data includes roads (with better rural coverage than other road layers), railroads, rivers, and legal and statistical geographic areas and boundaries, including ZIP codes, census tracts, and block groups. Demographic data is also included and is either built into the attribute table or can be joined by matching it to GEOIDs. The Census Bureau offers the data via download as shapefiles, geodatabases, KLM file pathways (Google Earth), and online mapping applications. Please visit the following website for more information.

<https://www.census.gov/geo/maps-data/data/tiger.html>

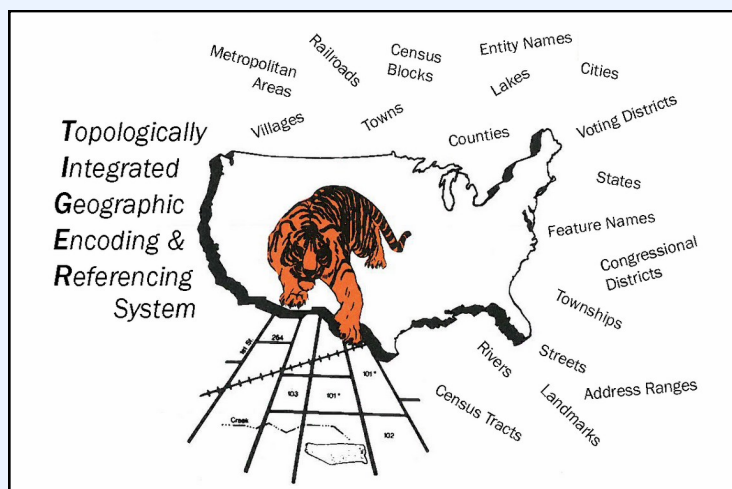


Image source: US Census Bureau

## New Staff Member: Jeff F.

By Jeff Fennell



Jeff Fennell has recently been hired as the newest member of the geospatial training team. Jeff has been an instructor since 2007, teaching geology, engineering, and computer aided design courses.

In addition to teaching, he has also developed textbooks and certification exams focusing on GIS. Jeff holds a bachelor's degree in geology from the University of Hawaii and a master's degree from the University of Colorado, Denver with a specialty in Geomatics and GIS.

After living overseas, Jeff and his wife are happy to return home to Colorado where they plan to do a lot of skiing this winter.

## CURRENT STAFF

**Chad Wallace**  
BOGS Branch Chief

**Shane Willard, GISP**  
Geospatial Program Manager/Contract Lead

**Donna Offerson**  
ELA Coordinator/  
Technical Support Administrator

**Lindsay Eaves**  
Geospatial Support Coordinator

**Rod Kuhns**  
GIS Applications Architect

**David O'Donnell**  
GIS Analyst

**Devin Johnson**  
GIS Analyst

**Travis Blacketter**  
Cartographer

**Brad Tatham, GISP**  
Senior Geospatial Trainer

**Katie Lewers**  
Geospatial Trainer

**Jeff Fennell**  
Geospatial Trainer

## BOGS in San Diego

By Travis Blacketter

Boozho (Hello) again! I recently had the opportunity to attend the ESRI® Users Conference in San Diego.

This five-day International conference hosted over 16,000 GIS users from around the world. The BIA had a booth where I spent a majority of my time interacting with GIS professionals and product vendors.

The end result was a fantastic opportunity to fill people in on what the BIA does for tribes, and more specifically, what BOGS does to support the BIA's mission. I also found and brought back valuable product information and services that our office uses and passes on to the tribes we serve.

Giigawabamiin Nagaaj (See you later)!



## XTools Pro

By Brad Tatham



XTools Pro functions include basic feature conversions, layer operations, table operations, data management tools, and others.

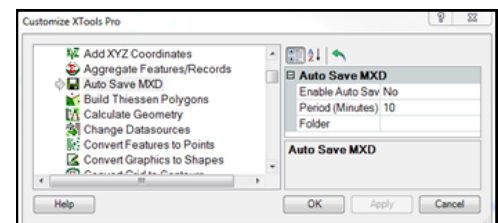
Often, a task can be done in XTools Pro or in ArcMap, but in ArcMap it takes several steps and the dialog boxes may have little documentation. XTools Pro also adds some capabilities in addition to those in ArcGIS Desktop.

Most of the tools are found on the XTools Pro toolbar. Here are some tools that might peak your interest:

- Auto save MXD: Saves the MXD file every 10 minutes or at a customize period of time.
- Multi-delete fields: Delete multiple fields (columns) in a table at one time.
- Table restructure: Takes a feature and creates another feature with field parameters changed by the user.

- Export table to MS Excel: Exports tables in ArcMap to Excel spreadsheets.
- Calculate geometry: Calculates perimeters and areas for polygons and lengths for polylines.
- Feature report: Click a feature and generate a report on that feature.
- Metadata editor: Provides easy access for editing metadata.
- Multiple layouts manager: Adds new layouts.

**XTools Pro is now available through an ELA.** Contact the Help Desk for more information!

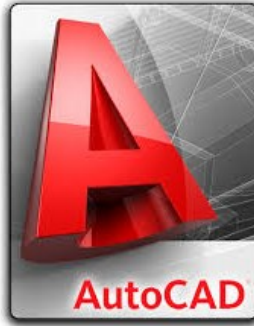




# ArcGIS for AutoCAD

By Brad Tatham

AutoCAD is a computer aided design (CAD) and drafting software program that is widely used by architects, engineers, graphic designers, and other professionals. Some AutoCAD users want or need to include data from ArcMap in their CAD drawings, so ESRI® has created ArcGIS for AutoCAD.



As this description suggests, ArcGIS for AutoCAD is primarily for AutoCAD users, but it serves as a bridge for using CAD data in ArcGIS. If ArcGIS for AutoCAD is installed, the user can add imagery inside AutoCAD and see if the data line up. If not, the data can be adjusted as necessary (using georeferencing or by projecting the data).

**AutoCAD data format for use in ArcGIS:** The preferred export format for using AutoCAD data in ArcGIS is DWG. There are tools in ArcMap, such as *CAD to Geodatabase*, that can load DWG files into

an ArcMap format. The coordinate system then needs to be set in ArcMap.

**ArcGIS for AutoCAD** is a free plug-in application for AutoCAD that facilitates the viewing of GIS files in AutoCAD. You can download the application from ESRI's website (<http://www.esri.com/software/arcgis/arcgis-for-autocad>). Once you have installed ArcGIS for AutoCAD, the new tools appear in a new ribbon in the AutoCAD interface.

Inside AutoCAD, users can create, change, and filter CAD data for use in ArcGIS. They can also add attributes (table data) to CAD layers for use in ArcMap. By working with DWG files with coordinate systems in AutoCAD, users can add ArcGIS Online or imagery and feature class services to view or analyze the data in AutoCAD.

It should also be noted that AutoCAD DWG files change with each new version; they are usually named for the year the AutoCAD version came out (ex: AutoCAD 2013), so check the compatibility chart between your versions of ArcMap and AutoCAD. The current versions that are supported by this tool are listed on the ESRI® website: <http://www.esri.com/software/arcgis/arcgis-for-autocad/common-questions>.

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## LiDAR

By Devin Johnson

Light Detection and Ranging (LiDAR) is a remote sensing technology for gathering certain types of geospatial data.

**How does LiDAR work?** A standard LIDAR system emits a beam of light from a laser source and then captures the returned light in sensors as it bounces back from a reflecting object. LiDAR sensors can be deployed on aircraft, drones, or satellites.

**History:** While LIDAR systems were used by the federal government as early as the 1960s, primarily for atmospheric studies, it wasn't until after 2000 that a combination of factors resulted in a boom of LIDAR data-gathering projects that are now utilized by federal, state and local governments.

**Using LiDAR data in ArcGIS:** LiDAR data are stored in raster format. You can add LiDAR products to your ArcGIS project by adding it as a raster layer, but you will need to ensure the coordinate system is specified correctly. Once your data is in ArcGIS, there are tools for managing LiDAR point clouds (.las or ASCII files) and creating useful products to aid research and decision making.

**Elevation:** A common application of LiDAR data is to calculate the distance from the sensor to the object using the time required for the round trip of the light emitting from and returning to the

sensor. This information can be used to create datasets such as digital elevation models (DEM), hillshades, and digital surface/terrain models (DSM/DTM). For example, the image below shows canopy elevations for a stand of Douglas firs. The colors indicate height above the ground surface.

Some LiDAR applications include forestry, inundation mapping (coastal or floods), meteorology, geology, and cellular network planning.

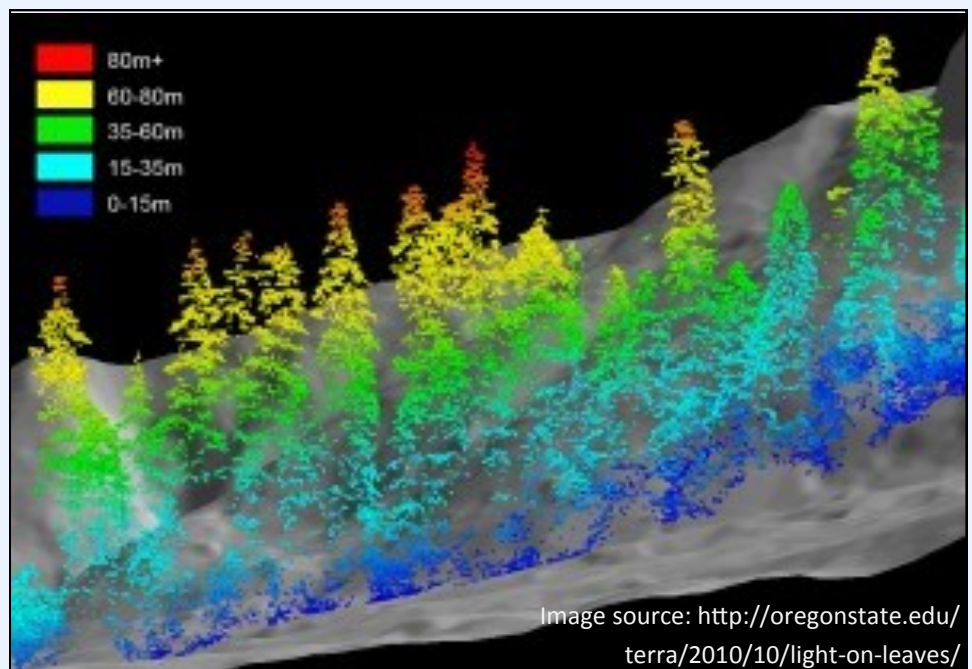


Image source: <http://oregonstate.edu/terra/2010/10/light-on-leaves/>

# OCTOBER 2015 – MARCH 2016

## TRAINING SCHEDULE

The Branch of Geospatial Support (BOGS) provides training to BIA employees and employees of federally recognized tribes. There is no tuition cost for this training. Training equipment and materials are provided by BOGS. Expenses for transportation, hotel accommodations, and meals are the responsibility of the participant's organization. Training courses are available at the BOGS Training Facility in Lakewood, Colorado and at various field locations per request and based on availability. The training schedule is subject to change at the discretion of the BIA.

Level	Region or Field Location	Course	Date
Beg.	<b>AK   BIA Alaska Regional Office</b> Anchorage, AK	<i>Principles of GIS</i>	Oct 5–8, 2015
Beg.	<b>GP   Lower Brule Sioux Tribe</b> Lower Brule, SD	<i>Principles of GIS</i>	Oct 26–29, 2015
Beg.	<b>BOGS Lakewood Training Facility</b> Lakewood, CO	<i>Principles of GIS</i>	Nov 2–5, 2015
Beg.	<b>BOGS Lakewood Training Facility</b> Lakewood, CO	<i>Principles of GIS</i>	Dec 7–11, 2015
Int.	<b>BOGS Lakewood Training Facility</b> Lakewood, CO	<i>Introduction to Cartography*</i>	Jan 4–7, 2016
Int.	<b>BOGS Lakewood Training Facility</b> Lakewood, CO	<i>Introduction to Cartography*</i>	Feb 8–11, 2016
Beg.	<b>SP   Cheyenne and Arapaho Tribes</b> Concho, OK	<i>Principles of GIS</i>	Feb 22–25, 2016
Beg.	<b>MW   BIA Midwestern Regional Office</b> Ashland, WI	<i>Principles of GIS</i>	Mar 21–24, 2016

All courses are taught in ArcGIS version 10.2.2 and ArcPad 10.2 unless otherwise indicated.

\* Indicates course has a prerequisite.

**Due to the high demand for training, please register early to help ensure placement in the requested course.**

**To register for a course, email or fax a completed and signed registration form to [geospatial@bia.gov](mailto:geospatial@bia.gov).**

Visit the Geospatial Support website at <http://bia.gov/> and select **Geospatial** from the dropdown, or contact the Geospatial Support Help Desk for a copy of the latest training brochure which includes a registration form, course descriptions, cancellation and absence policy, priority information, and other training policies.

### BUREAU OF INDIAN AFFAIRS OFFICE OF TRUST SERVICES DIVISION OF LAND TITLES AND RECORDS BRANCH OF GEOSPATIAL SUPPORT

13922 Denver West Parkway, Building 54, Suite 300, Lakewood, CO 80401  
Phone: 877.293.9494 (toll-free) Fax: 303.231.5229 Email: [geospatial@bia.gov](mailto:geospatial@bia.gov)

<http://bia.gov>

(select **Geospatial** from the dropdown)

Photo from GIS Training Class

BOGS Training Facility, Lakewood, CO

September 2015

Branch of Geospatial Support  
39.744957, -105.154573